

CLAIMS

What is claimed is:

1. A method for generating and accessing usage measurements data associated with signaling messages routed or processed by a routing node in a communications network, the method comprising:
 - (a) receiving, at a communication link module (CLM) located within a routing node, a signaling message;
 - (b) generating and storing first peg count information on the CLM based on information contained within the signaling message;
 - (c) polling the CLM to request the first peg count information;
 - (d) in response to polling the CLM, sending the first peg count information to a usage measurements module (UMM); and
 - (e) communicating the first peg count information from the UMM to an external application located on a general-purpose computing platform via an IP communication link.
2. The method of claim 1 wherein the CLM is a time division multiplexed (TDM) based signaling link interface module.
3. The method of claim 1 wherein the CLM is an asynchronous transfer mode (ATM) based signaling link interface module.
4. The method of claim 1 wherein the CLM is an IP based signaling link interface module.
5. The method of claim 1 wherein storing first peg count information on the CLM includes storing information in random access memory (RAM).
6. The method of claim 1 comprising storing the first peg count information on a disk storage medium.

7. The method of claim 1 wherein generating first peg count information includes generating first peg count information based on at least one of an origination point code (OPC) value, a destination point code (DPC) value, a called party address (CdPA) value, and a calling party address (CgPA) contained in the signaling message packet.
8. The method of claim 1 wherein sending the first peg count information to a UMM includes sending the first peg count information to the UMM via a communication bus that connects the CLM and the UMM.
9. The method of claim 1 comprising forwarding the first peg count information from the UMM to an operations, administration, and maintenance module internal to the routing node.
10. The method of claim 1 comprising routing the signaling message from the CLM to an internal processing module (IPM) within the routing node.
11. The method of claim 10 comprising:
 - (a) receiving the signaling message packet at the IPM;
 - (b) generating and storing second peg count information on the IPM;
 - (c) polling the IPM to request the second peg count information;
 - (d) in response to polling the IPM, sending the second peg count information to the UMM; and
 - (e) communicating the second peg count information from the UMM to the general-purpose computing platform via the IP communication link.
12. The method of claim 11 comprising performing SCCP/TCAP processing on the first signaling message at the IPM.

13. The method of claim 12 wherein the SCCP/TCAP processing includes number portability processing and the second peg count information relates to the number portability processing.
14. The method of claim 12 wherein the SCCP/TCAP processing includes
5 global title translation (GTT) processing and the second peg count information relates to the GTT processing.
15. The method of claim 12 comprising, at the IPM, performing triggerless number portability processing on the signaling message, and wherein the second peg count information relates to the triggerless LNP processing.
- 10 16. The method of claim 12 comprising, at the IPM, performing intelligent network (IN) processing on the signaling message and wherein the second peg count information relates to the IN processing.
17. The method of claim 12 comprising, at the IPM, performing TCAP processing on the signaling message, and wherein the second peg count
15 information relates to the TCAP processing.
18. A method for load sharing between usage measurements modules within a routing node, the method comprising:
 - (a) maintaining, at a primary usage measurements module, a master query list including queries for usage measurements or peg count
20 information;
 - (b) distributing a portion of the master query list to at least one secondary usage measurements module;
 - (c) forwarding queries from the primary and secondary usage measurements modules to internal processing modules within the
25 routing node;

- (d) receiving usage measurements in response to the query messages; and
- (e) aggregating the usage measurements at the primary usage measurements module.

5 19. The method of claim 18 comprising forwarding the aggregated query messages from the primary usage measurements module to an external message processing platform via a high speed communications link.

10 20. The method of claim 18 comprising, at the primary usage measurements module, monitoring the status of secondary usage measurements modules, and, in response to detecting failure of one of the secondary usage measurements modules, re-allocating portions of the master query list.

15 21. The method of claim 18 comprising, at the secondary usage measurements module, monitoring the status of the primary usage measurements module, and, in response to detecting failure of the primary usage measurements module, assuming the role of the primary usage measurements module.

20 22. A system for generating and accessing usage measurements associated with signaling message packets routed through a packet routing node in a communications network, the system comprising:

- (a) a communication link module (CLM) adapted to receive a signaling message, generate and store first peg count information based on information contained within the signaling message; and
 - (b) a first usage measurements module (UMM) for polling the CLM, receiving the first peg count information from the CLM, and for
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communicating the peg count information to external devices over
a high-speed communication link.

23. The system of claim 22 wherein the CLM is a signaling system 7 signaling
link interface module (LIM).

5 24. The system of claim 22 wherein the CLM is an IP capable data
communications module (DCM).

25. The system of claim 22 wherein the CLM includes random access
memory (RAM) for temporarily storing the first peg count information.

26. The system of claim 22 wherein the communication link module includes
10 a plurality of layers and each layer generates peg counts for received
messages.

27. The system of claim 22 wherein the first usage measurements module
includes:

- 15 (a) a poller for polling the communications link module to obtain the
first peg count information;
- (b) an entity collection controller for controlling the poller;
- (c) a measurement report controller for generating reports based on
the first peg count information; and
- 20 (d) a file transfer application for sending the reports to external
devices over the high speed communication link.

28. The system of claim 22 comprising a disk storage device operatively
associated with the first UMM for storing the first peg count information.

29. The system of claim 22 wherein the first peg count information is based
on at least one of an origination point code (OPC) value, a destination
25 point code (DPC) value, a called party address (CdPA) value, and a

calling party address (CgPA) value contained in the signaling message packet.

30. The system of claim 22 wherein the CLM is adapted to send the first peg count information to the first UMM via a communication bus that connects the CLM and the first UMM.
31. The system of claim 22 comprising an internal processing module (IPM) for performing internal processing operations on received signaling messages and for generating second peg count information based on the processing operations.
32. The system of claim 31 wherein the first UMM is adapted to poll the IPM and receive the second peg count information from the IPM.
33. The system of claim 31 wherein the IPM includes a signaling connection control part/transaction capabilities application part (SCCP/TCAP) processing module and the second peg count information relates to SCCP/TCAP messages.
34. The system of claim 33 wherein the SCCP/TCAP processing module includes a number portability processor and the second peg count information relates to number portability queries or responses.
35. The system of claim 33 wherein the SCCP/TCAP processing module includes a global title translation (GTT) processor and the second peg count information relates to global title translations.
36. The system of claim 22 comprising a general-purpose computer coupled to first UMM via the high speed link for receiving the first peg count information.

37. The system of claim 22 comprising at least one second UMM for polling the communications link module for peg count information.
38. The system of claim 37 wherein the first UMM is adapted to control peg count collection by the second UMM.
- 5 39. The system of claim 38 wherein the first UMM maintains a master query list and distributes a portion of the master query list to the second UMM to control peg count collection by the second UMM.
40. The system of claim 22 wherein the first UMM includes a report generator for generating user-configurable reports in response to user-specified parameters.
- 10 41. A peg count collection system comprising:
- (a) a signaling gateway including first internal processing modules for generating peg count information based on received or processed signaling messages and a second internal processing module for polling the first internal processing modules to obtain the peg count information and for forwarding the peg count information to an external device via a TCP/IP connection; and
- 15 (b) a general purpose computing platform external to the signaling gateway for receiving the peg count information via the TCP/IP connection and for processing the peg count information.
- 20 42. The system of claim 41 wherein the general purpose computing platform includes a billing application for generating bills based on the peg count information.

43. The system of claim 41 wherein the general purpose computing platform includes a billing verification application for verifying bills for telecommunications services based on the peg count information.
44. The system of claim 41 wherein the general-purpose computing platform includes a usage-measurements application for generating usage measurement reports s based on the peg count information.

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